

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,970,560 B1  
APPLICATION NO. : 09/710703  
DATED : November 29, 2005  
INVENTOR(S) : John Josef Hench et al.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the title page, item (56) References Cited,  
Page 2, OTHER PUBLICATIONS, line 34 reads "...Guanghan Xu et al., IEEE Transactions in Singal Process-,...". and should read -- ...Guanghan Xu et al., IEEE Transactions in Signal Process-,... --.

Page 2, OTHER PUBLICATIONS, line 37 reads "Alexanda Duel-Hallen et al., IEEE Transactions on Com-,...". and should read -- Alexandra Duel-Hallen et al., IEEE Transactions on Com-,... --.

Column 1, line 46 reads "...transmitted over wires, cable, fiber optics wireless, or other..." and should read -- ...transmitted over wires, cable, fiber optics, wireless, or other... --.

Column 9, lines 32-33 read "...value (computed over the entire spectrum of a communication channel.) For instance, the probabilistic cause-effect ..." and should read -- ...value (computed over the entire spectrum of a communication channel). For instance, the probabilistic cause-effect ... --.

Column 11, line 45 reads "...services in the time interval  $T \equiv t \beta[T, T+dT]$ , where  $dT...$ " and should read -- ...services in the time interval  $T \equiv t \epsilon[T, T+dT]$ , where  $dT...$  --.

Column 11, lines 45-46 reads "...where  $dT$  a small length of time on the order of one to a small..." and should read -- ...where  $dT$  is a small length of time on the order of one to a small... --.

Column 11, lines 51-52 read "...measured levels of noise the time interval  $T \equiv t \beta[T, T+dT]$ . The list  $M$  is a vector whose entries correspond..." and should read -- ...measured levels of noise the time interval  $T \equiv t \epsilon[T, T+dT]$ . The list  $M$  is a vector whose entries correspond... --.

Column 12, line 67 reads " $A(3,3) A(3,3)+1=2$ " and should read --  $A(3,3)=A(3,3)+1=2$  --.

Column 13, line 51 reads, "A. Forced Training" and should read -- Forced Training: --.  
(no indent)

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Column 16, line 67 reads, "...external singular vectors of ● ● or ● ••● ● ●

Since a ..." and should read -- ...external singular vectors of ● ● or ● ••● ● ● ●.  
Since a ... --.

Column 18, line 36 reads, "The signal transform block 408 coverts raw, digitized..."  
and should read -- The signal transform block 408 converts raw, digitized... --.

Column 18, lines 66-67 read, "...be to provide for four 64-bin groupings (quartiles) for non aggregate data. The drift estimates help give more accurate..." and should read -- ...be to provide for four 64-bin groupings (quartiles) for non-aggregate data. The drift estimates help give more accurate... --.

Column 19, line 25 reads, "...or the steady state value of noise before and after and event." and should read -- ...or the steady state value of noise before and after an event. --.

Column 20, line 64 reads, "PSD<sub>HDSL Disturber</sub> = K<sub>HDSL</sub>..." and should read -- PSD<sub>HDSL-Disturber</sub> = K<sub>HDSL</sub>... --.

Column 21, line 30 reads,

$$\sin^2\left(\frac{\pi f}{f_0}\right) \times \frac{1}{1 + \left(\frac{f}{f_3 \text{ dB-LPF}}\right)^6} \times \frac{f^2}{f^2 + f_3^2 \text{ dB-HPF}} \times (x_n \times f^{3/2})$$

and should read

$$\sin^2\left(\frac{\pi f}{2f_0}\right) \times \frac{1}{1 + \left(\frac{f}{f_3 \text{ dB-LPF}}\right)^6} \times \frac{f^2}{f^2 + f_3^2 \text{ dB-HPF}} \times (x_n \times f^{3/2})$$

Column 21, line 53 reads, "PSD<sub>ADSL Disturber</sub> = K<sub>ADSL</sub>..." and should read -- PSD<sub>ADSL-Disturber</sub> = K<sub>ADSL</sub>... --.

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Column 22, line 24 reads, "It should also be noted that case certain frequency bins are..." and should read -- It should also be noted that in case certain frequency bins are... --.

Column 22, line 35 reads, "The frequency of zeros just increase the level of confidence..." and should read -- The frequency of zeros just increases the level of confidence... --.

Column 23, line 37 reads, "Furthermore, if the columns of A are suitable normalized..." and should read -- Furthermore, if the columns of A are suitably normalized... --.

Column 26, lines 35-37 read, "...identified. This algorithm is appropriate for identifying the sudden changes in SNR that is common when the level of noise from disturbers suddenly change due to an..." and should read -- ...identified. This algorithm is appropriate for identifying the sudden changes in SNR that are common when the level noise from disturbers suddenly changes due to an... --.

Column 27, line 10 (Equation 5) reads,  
" $p_{ij} = P\{M(k)=M_j | M(k-1)=M_i\}$ " and should read --  $p_{ij} = P\{M(k)=M_j | M(k-1)=M_i\}$  --.

Column 28, lines 11-12 read,  
" $P_{01}(k-1) = \mu_{1|1}(P_1(k-1) + (x_1(k-1) - x_{01}(k-1))^2) + \mu_{2|1}(P_2(k-1) + (x_2(k-1) - x_{01}(k-1))^2)$ "  
and should read  
--  $P_{01}(k-1) = \mu_{1|1}(P_1(k-1) + (x_1(k-1) - x_{01}(k-1))^2) + \mu_{2|1}(P_2(k-1) + (x_2(k-1) - x_{01}(k-1))^2)$  --.

Column 28, lines 13-14 read,  
" $P_{02}(k-1) = \mu_{1|2}(P_1(k-1) + (x_1(k-1) - x_{02}(k-1))^2) + \mu_{2|2}(P_2(k-1) + (x_2(k-1) - x_{02}(k-1))^2)$ "  
and should read  
--  $P_{02}(k-1) = \mu_{1|2}(P_1(k-1) + (x_1(k-1) - x_{02}(k-1))^2) + \mu_{2|2}(P_2(k-1) + (x_2(k-1) - x_{02}(k-1))^2)$  --.

Column 30, lines 24-25 read, "The likelihood functions associated with these moments assuming a Gaussian distribution is..." and should read -- The likelihood functions associated with these moments assuming a Gaussian distribution are... --.

Column 31, line 26 reads, "II. Event Clustering" and should read -- III. Event Clustering --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 31, line 45 reads, "...collection sample time  $t_k$ . At this time, a window is either..." and should read -- ... collection sample time  $t_k$ . At this time, a window is either... --.

Column 32, line 18 reads, "III. Event Analysis" and should read -- IV. Event Analysis --.

Column 33, line 26 reads, "...coefficients and transfer functions. Note that these are the..." and should read -- ...coefficients and transfer functions). Note that these are the... --.

Column 33, line 28 reads, "...defined above in section I. Training, above." and should read -- ...defined above in section I. Training. --.

Column 33, line 35 reads, "... (based upon statistics of observed SNR changes vs. offender..." and should read -- ...based upon statistics of observed SNR changes vs. offender... --.

Column 33, line 40 reads, "...comparison may be be done probabilistically using Bayesian..." and should read -- ...comparison may be done probabilistically using Bayesian... --.

Column 33, line 43 reads, "...connectivity matrix, see section I, Training, above) to some..." and should read -- ...connectivity matrix, see section I. Training) to some... --.

Column 34, line 1 reads, "... $v_{ij}$ ,  $i=1, m$  and  $j=1, \dots, n_i, n_i$  possibly different for each  $i, \dots$ " and should read -- ... $v_{ij}$ ,  $i=1, \dots, m$  and  $j=1, \dots, n_i, n_i$  possibly different for each  $i, \dots$  --.

Column 35, lines 1-2 read, "...as "was the victim affected or not?" All objects reporting a chance are included, as are all objects expected to have..." and should read -- ...as "was the victim affected or not?" All object reporting a change are included, as are all objects expected to have... --.

Column 35, lines 8-9 read, "...in the network the events occur and the possible cause depend on which victims are being considered." and should read -- ...in the network the events occur and the possible cause depends on which victims are being considered. --.

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Column 38, lines 34-35 read, "...lines have become inconclusive. In this case, more than one likely causes may be the conclusion." and should read -- ...lines have become inconclusive. In this case, more than one likely cause may be the conclusion. --.

Column 39, line 40 reads,

$$\begin{aligned} & \text{"}\Phi_{k+1}^{-1} = \Phi_k^{-1} - \Phi_k^{-1} u_{k+1} (I + u_{k+1}^T \Phi_k^{-1} u_{k+1})^{-1} u_{k+1}^T \Phi_k^{-1}\text{" and should read} \\ & \text{-- } \Phi_{k+1}^{-1} = \Phi_k^{-1} - \Phi_k^{-1} u_{k+1} (I + u_{k+1}^T \Phi_k^{-1} u_{k+1})^{-1} u_{k+1}^T \Phi_k^{-1} \text{ --.} \end{aligned}$$

Column 39, lines 42-43 reads,

$$\begin{aligned} & \text{"}\Theta_{k+1} = (I - \Phi_k^{-1} u_{k+1} (I + u_{k+1}^T \Phi_k^{-1} u_{k+1})^{-1} u_{k+1}^T) \Theta_k + \Phi_{k-1} y_{k+1} u_{k+1}^T\text{"} \\ & \text{and should read} \\ & \text{-- } \Theta_{k+1} = (I - \Phi_k^{-1} u_{k+1} (I + u_{k+1}^T \Phi_k^{-1} u_{k+1})^{-1} u_{k+1}^T) (\Theta_k + \Phi_k^{-1} y_{k+1} u_{k+1}^T) \text{ --.} \end{aligned}$$

Column 40, line 14 reads, "...as four out-of-domain coupling coefficients, beta<sub>11</sub>, beta<sub>12</sub>,..." and should read -- ...as four out-of-domain coupling coefficients, beta<sub>11</sub>, beta<sub>12</sub>,... --.

Column 40, line 25 reads, "...input spectra of the DSL Services. The inputs T<sub>1</sub> and T<sub>2</sub>, are..." and should read -- ...input spectra of the DSL Services. The inputs T<sub>1</sub> and T<sub>2</sub> are... --.

Column 40, line 32 reads, "...is assumed to be the identity matrix, i.e., M<sub>1</sub>=1. Similarly, ..." and should read -- ...is assumed to be the identity matrix, i.e., M<sub>1</sub>=I. Similarly, ... --.

Column 40, line 67 reads, "...variance to the variance derived from from an ensemble of ..." and should read -- ...variance to the variance derived from an ensemble of... --.

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Column 41, line 48 reads, "...  $\bullet$   $\bullet$  or  $\bullet^{-1}$   $\bullet$   $\bullet$  Since the solution of the identification..." and should read -- ...  $\bullet$   $\bullet$  or  $\bullet^{-1}$   $\bullet$   $\bullet$  . Since the solution of the identification... --.

Column 41, line 64 reads, "...of the frequency bins, while the second could be propagate..." and should read -- ...of the frequency bins, while the second could be propagating... --.

Column 42, line 65 reads,

" $\hat{v}_{jk}\sigma_{jk}^2|u_j|^2$ " and should read --  $\hat{v}_{jk} = \sigma_{jk}^2|u_j|^2$  --.

Column 43, line 40 reads, "Impairment Estimation for Out-of-Domain Offenders" and should read -- 3. Impairment Estimation for Out-of-Domain Offenders --.

Column 43, line 27 reads,

" $\hat{v}_{pq/k}\sum_{pq/k}^2|u_{pq/j}|^2$ " and should read --  $\hat{v}_{pq/k}\sigma_{pq/k}^2|u_{pq/j}|^2$  --.

Column 45, lines 34-35 read, "...instructions which, when executed in a processing system, causes said system to perform a method, the method com-..." and should read -- ...instructions which, when executed in a processing system, cause said system to perform a method, the method com-... --.

Signed and Sealed this

Twenty-sixth Day of February, 2008



JON W. DUDAS  
Director of the United States Patent and Trademark Office